For example, the whole range of hypothetical and abstract assertions would require to undergo some preliminary torture: wherever a sentence intends to assert that one fact conditions another, without expressing an opinion as to the actual fulfilment of the condition, we should have to contraposit the sentence and restrict it to the negative form. Thus "policemen seven feet high would attract a crowd" seems to require reading: "Things that would fail to attract a crowd are not policemen seven feet high"—a form which most children would think unnatural. Indirectly the child might learn, by this system as well as by any other, that the real difficulty of avoiding logical blunders lies more in translating ordinary language into carefully-defined symbols, than in the operations afterwards performed by merely mechanical rules. But teachers who desire rather to show by diagrams the direct binding force of deductive reasoning would do well to select for illustration those propositions which can be most simply and naturally regarded as expressing the "extensive" comparison of classes. It is only fair to Mr. Lewis Carroll to add that the examples he provides for exercise will not perhaps do more to keep alive the notion that logic is trivial than many of those that are given in perfectly sober text-books. As things are, the junior student seems, not unnaturally, to believe that the safest plan of answering logical conundrums is to find out the most ingenious and roundabout way of avoiding the answer that would be dictated by common-sense. It is worth considering whether the correction of this tendency is not a more pressing need in the teaching of elementary logic than even the best new variations on the old surprise of finding that absurdity in matter is no bar to legitimacy in form.

ALFRED SIDGWICK.

OUR BOOK SHELF.

Nitrate of Soda: its Importance and Use as a Manure. A Prize Essay. By A. Stutzer, Ph.D., re-written and edited by P. Wagner, Ph.D. (London: Whittaker and Co., 1887.)

IN the spring of 1885 a committee of South American nitrate of soda manufacturers offered a prize for the best popular essay on the above subject. The judges were Profs. Grandeau (France), Adolf Mayer (Holland), Petermann (Belgium), Thoms (Russia), P. Wagner (Germany), and Mr. Warington (England). The prize was divided between two of the competitors, Dr. A. Stutzer, President of the Bonn Agricultural Experiment Station, and Prof. Adolphe Damseaux, of Gembloux.

The book now presented embodies the main points of Dr. Stutzer's essay, combined with the views expressed by the committee of judges, and important matter contained in the second prize essay. The subject is divided into two parts, in the first of which theoretical questions as to the advantages to be derived from the use of nitrate of soda are ably and thoroughly sifted, and the error of many popular prejudices is exposed. The important question of the impoverishment of the soil is carefully discussed, and the conclusion arrived at that it causes an increased consumption of nutrient substances only in proportion to the increase of crop, and does not increase the percentage of potash and phosphoric acid in the crop, and even that a larger crop is produced with proportionally smaller use of the two latter materials. It is also shown that, although nitrate of soda does cause a large increase of straw, yet it quite as certainly causes an increase in the quantity of grain.

The second portion of the book contains very clear instructions for the use of nitrate of soda with various crops, and will prove a capital practical guide for farmers.

A. E. T.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.*

[*The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to insure the appearance even of communications containing interesting and novel facts.*]

Units of Weight, Mass, and Force.

IN a letter to NATURE, dated March 29, I stated that we have "no names for units of velocity, acceleration, impulse, momentum, &c." This cannot be said now. Through the kindness of Messrs. Macmillan and Co., I have, this morning, received a copy of "Dynamics for Beginners," by the Rev. J. B. Lock, M.A. In this book the units of velocity and of acceleration are named a velo, and a celo, respectively. Other units also have received names, "the use of which" (as the author justly observes) "will be found to simplify considerably the language of the subject." The preface to this book is dated April 1887.

Bardsea, April 23. EDWARD GEOGHEGAN.

Earthquake in the Western Riviera.

AN interesting fact in connexion with the late disastrous earthquake which did such damage along the Western Riviera of Liguria on the morning of February 23 last, and with which I only lately became acquainted through my friend Dr. Bellotti, of Milan, who was at Nice at the time, is that during the days immediately following the catastrophe quite a large number of deep-sea fish were taken dead or half dead in shallow water or found stranded on the beach. This happened more especially in the immediate neighbourhood of Nice, whose sea, as that of Messina, has long been well-known for its richness in deep-sea fish.

I have since taken the pains to inquire more fully into the subject, which has a very special interest for me, and through Gal frères I have learnt that the following species were taken: *Alepocephalus rostratus* (mostly dead and floating), numerous; *Pomatomus telescopium*, several; *Tetragonurus cuvieri*, one specimen; *Dentex macrophthalmus*, many; *Scopelus elongatus*, several; *Scopelus humboldti*, several; *Spinax niger*, abundant.

Alepocephalus rostratus is a typical deep-sea form, only found as yet, and rarely, during the summer along the Western Riviera by deep-sea liners.

Several of the fish above mentioned are in my possession.

Firenze, April 20. HENRY H. GIGLIOLI.

The Boiling-Point and Pressure.

A VERY convenient lecture experiment to show that the boiling-point of liquids is lowered by diminishing the pressure of the surrounding medium, may be made with one of Ducretet's carbon-dioxide tubes. The lower part of the tube contains the CO_2 in the liquid condition, while the upper part is, of course, filled with the same body in the gaseous state. By subjecting this upper half of the tube to a jet of ether spray, the pressure of the inclosed gas will gradually diminish, and after a few seconds the liquid below will enter into brisk ebullition.

The experiment is readily adaptable for projection on a screen. M. F. O'REILLY.

St. Joseph's College, Clapham.

A Sparrow chasing Pigeons.

MR. J. JENNER WEIR (NATURE, vol. xxxv. p. 584) says that he has never observed a sparrow to chase a pigeon *except when on the wing.* I wish to say that I have frequently witnessed the occurrence, having kept pigeons for a number of years. I have

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often seen sparrows chase pigeons on the house-tops, particularly when the former have had their nests in the vicinity. One season, about ten years ago, I well remember the annoyance these impudent birds caused to the pigeons, for whenever the latter were let out in the morning to air themselves the sparrows would immediately attack them and continue the harassment without intermission all day long. On one occasion, during the same year, I recollect a very amusing scene between a cock sparrow and a cock tumbler pigeon. The former had just flown on to the house-top with a large piece of bread in his bill, when the pigeon advanced rapidly towards him with the intention of seizing the dainty morsel. The plucky sparrow, however, was in readiness for him, and dropping the bread he made a bold onslaught on his larger feathered relation, pecking vigorously at his rear quarters. The pigeon not expecting an attack from such an insignificant foe, and being utterly unprepared for a "round," did not attempt to use its wings as weapons, as is its custom, but contented itself with cooing, and aiming a few rapid pecks with its beak, and then ignominiously took to flight, leaving a few feathers behind in its hurry. No sooner, however, had it quitted the field than about half a dozen other sparrows, who had been sitting on the chimney-pots in the neighbourhood watching the affray, dashed after it and chased it round and round the house, about half a dozen times, before they considered that it had had sufficient punishment. Such is an example of the annoyance my pigeons were sometimes subjected to by the sparrows. I may add that I have frequently observed sparrows and starlings fighting, and also on one occasion saw a sparrow chase a jackdaw which had evidently been attempting to take the sparrow's eggs or young ones. The records of a few other curious instances of birds fighting which I will briefly extract from my diary may perhaps be interesting. "1880 May. Saw a starling attack and drive away two jackdaws which had gone in quest of its eggs. 1880 June. Saw a cloud of redpolls chase a cuckoo. 1883 June. Witnessed a desperate fight between a flock of jackdaws and a heron, in mid air. 1885 June. Saw a skylark chase a cuckoo and drive it away. 1885 August. Saw a mistletoe thrush chase a sparrow-hawk and drive it away. 1886 July. Witnessed a great battle between a large flock of starlings and a flock of rooks, the former having invaded the feeding-grounds of the latter."

W. HARCOURT BATH.

Ladywood, Birmingham, April 25.

THE ROYAL SOCIETY SELECTED CANDIDATES.

THE following is the list of the fifteen candidates selected by the Council of the Royal Society, at their meeting last Thursday, to be recommended for election into the Society. The ballot will take place on Thursday, June 9, at 4 p.m. We print with the name of each of the candidates the statement of his qualifications.

JOHN YOUNG BUCHANAN, M.A. (Glasgow),

F.R.S.E., F.C.S. Chemist and Physicist to the *Challenger* Expedition, 1872–76. Invented and improved apparatus and methods for collecting and analysing ocean water. Author of "Report of the Specific Gravity of Ocean Water" (Part 2, vol. i., of "The Voyage of H.M.S. *Challenger*"). Since the return of the *Challenger*, Mr. Buchanan has continued his investigations in the steam-yacht specially fitted up by him for the purpose. The following are the titles of some of the papers contributed by him to scientific Transactions and Journals: "Sur l'acide chloropropionique" (*Comp. Rend.*, lxv., p. 417); "On the Formation and Decomposition of some Chlorinated Acids" (Proc. Roy. Soc. Edin., vii., p. 419); "On the Absorption of Carbonic Acid by Saline Solutions" (Proc. Roy. Soc., xxii., pp. 192 and 483); "On the Specific Gravity of Ocean Water" (Proc. Roy. Soc. Edin, ix., 283); "On the Compressibility of Glass" (Trans. Roy. Soc. Edin., 1880); "On a Solar Calorimeter, and some Observations made with it in Upper Egypt" (Proc. Roy. Soc. Edin., xi., 827).

J. THEODORE CASH, M.D., C.M.,

Has devoted himself to physiological and pharmacological science, and has made discoveries in these as described in the following works, of which he is the author:—"On the Relationship between the Muscle and its Contraction" (*Journ. Anat. Phys.*, vol. xv.); "Ueber den Antheil des Magens und des Pancreas an der Verdauung des Fettes" (*Arch. für Physiol.*, 1880); "Description of a Double Cardiograph for the Frog's Heart" (*Journ. of Physiol.*, vol. iv.). With Dr. Lauder Brunton:—"Contributions to our Knowledge of the Connexion between Chemical Constitution, Physiological Action and Antagonism" (Phil. Trans., 1884); "Action of Alkaloids on Oxidation" (St. Barth. Hosp. Rept., vol. xviii.); "Influence of Heat and Cold on Muscles poisoned by Veratria" (*Journ. of Physiol.*, vol. iv.); "On the Valvular Action of the Larynx" (*Journ. Anat. Phys.*, vol. xvii.); "On the Effect of Electrical Stimulation of the Frog's Heart, and its Modification by Heat, Cold, and the Action of Drugs" (Proc. Roy. Soc., vol. xxxv.); "Ueber Vorbeugende Gegengifte" (*Centralb. für d. Med. Wiss.*, 1884); and several other papers. With Dr. Yeo:—"The Effects of certain Modifying Influences on the Latent Period of Muscle Contraction" (Proc. Roy. Soc., vol. xxxiii.); "The Variations of Latency in certain Skeletal Muscles" (Proc. Roy. Soc., vol. xxxv.); "On the Relationship between the Active Phases of Contraction and the Latent Period of Skeletal Muscle" (*Journ. of Physiol.*, vol. iv.).

SIR JAMES NICHOLAS DOUGLASS,

Civil and Mechanical Engineer. Engineer-in-Chief to the Hon. Corporation of Trinity House. Is a Member of the Smeatonian Society of Civil Engineers and a Member of the Council of the Inst. Civ. Eng. Member Inst. Mech. Eng. Has been attached to coast signalling since 1847, and the development of electricity for coast lighting since 1862. Has designed and erected several rock lighthouses on the coasts of this country and abroad; some of these works being of exceptional difficulty, for which he received on two occasions a testimonial from the Hon. Corporation of Trinity House. He designed and erected the new Eddystone Lighthouse. On the completion of this work he received the honour of knighthood. He has very materially improved the optical apparatus, lamps, lanterns, and fog-signal apparatus of lighthouses and light-vessels. Is the author of several papers. For one on "The Wolf Rock Lighthouse," and another on "The Electric Light applied to Lighthouse Illumination" (Proc. Inst. Civ. Eng., vols. xxx. and lvii.), he received the Telford and Watt Gold Medals of the Institution of Civil Engineers.

PROF. J. A. EWING, B.SC. (Edin.),

Professor of Engineering, University College, Dundee. Author of papers contributed to the Royal Society treating of the Thermo-electric quality of metals; the Electric effect due to twisting Iron and Steel wire when magnetised; and various papers on the Magnetic Qualities of Iron and Steel, all of which have been published (see Proc. Roy. Soc., Nos. 205, 210, 214, 216, 220, and the present volume of the Transactions). Well known for his work in connexion with the observation and recording of Earthquake Phenomena, having contributed numerous papers on this subject to the Seismological Society of Japan; is also joint author with the late Prof. Fleeming Jenkin of several papers communicated to the Royal Society of Edinburgh, and published in the Transactions of that Society. Was for five years in Japan as Professor of Engineering, and has held his present Chair (Dundee) for two and a half years.

PROF. GEORGE FORBES, M.A.,

F.R.S. Edin., F.R.A.S. Member of the Astronomische Gesellschaft, of the Electro-technical Society of Vienna, and of the Society of Telegraph-Engineers. Associate of the Inst. Civil Engineers. Chevalier of the Legion of Honour. Formerly Professor of Natural Philosophy at Anderson's College, Glasgow. Consulting Engineer (Electrical). Author of the following amongst other papers:—"On the Meteoric Shower of November 14, 1866" (*Phil. Mag.* 1867); "On the Meteor-Shower of August 1867;" "On Astronomical Refraction;" "On certain Connexions between the Molecular Properties of Metals;" "On Irradiation;" "On Thermal Conductivity;" "On an Instrument for Indicating and Measuring the Fire-damp in Mines," &c. (Brit. Assoc. Rep., 1867, 1872, 1873, 1878, &c.); "Note on the Zodiacal Light;" "On the After-glow of Cooling Iron at a Dull Red Heat;" "On Diamagnetic Rotation;" "On Comets;" "On the Theory of the Telephone;" "On an Ultra-Neptunian Planet, &c." (Proc. Roy. Soc. Edin., vols. viii., ix., x.); "On the Velocity of White and Coloured Light" (in conjunction with the late Dr. James Young, F.R.S.—Phil. Trans., 1882). Also author or joint author of the following separate works, published by Macmillan:—I. "The Transit of Venus;" II. "Rendu's Theory of Glaciers."

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